



**OKLAHOMA**

## Comprehensive Nutrient Management Plan (CNMP)

For Poultry Waste Systems

Mitchell Poultry Farm  
54308 South 683 Road  
Colcord, OK 74338  
918-3236-4435

Contact Person: Jerri Mitchell

Location: 8-20-25

RECEIVED

MAR 17 2008

AG ENVIRONMENT  
STATE DEPT. OF AGRICULTURE

Prepared in Cooperation with the:

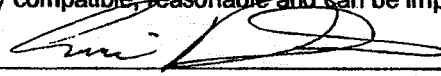
**USDA – Natural Resources Conservation Service**

And

**Delaware County Conservation District**

### District Conservationist Certification, Jay Field Service Center

I certify that I have reviewed this CNMP for technical adequacy and that the elements of the CNMP are technically compatible, reasonable and can be implemented.

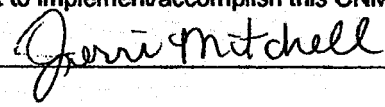
Signature:  Date: 2-22-07

Name: Eric Daniels

Title: District Conservationist

### Owner/Operator

As the owner/operator of this CNMP, I certify that I, as the decision maker, have been involved in the planning process and agree the items/practices listed in each element are needed. I understand that I am responsible for keeping all the necessary records associated with the implementation of this CNMP. It is my intent to implement/accomplish this CNMP in a timely manner as described in the plan.

Signature:  Date: 2-22-07

To: Norma 3/17/08  
From: ~~Quincy~~ Sally Abbott  
Please put on  
a list of  
"NRCS prepared  
CNMP" in County identified.

ENTERED BY  
MAR 6 2008  
SALLY ABBOTT

## INDEX

<b>Page 3</b>	<b>Purpose of the Comprehensive Nutrient Management Plan (CNMP)</b>
<b>Page 4-- 6</b>	<b>Maps &amp; Client Narrative Information</b>
<b>Page 7-- 8</b>	<b>Manure and Wastewater Handling and Storage, Land Treatment, Soil Testing Plan, Animal Waste Management Testing Plan, Nutrient Management Component, Application Equipment Calibration.</b>
<b>Page 9--12</b>	<b>Animal Waste and Soil Testing Results, Oklahoma Phosphorus Assessment Results, Setbacks,</b>
<b>Page 13--14</b>	<b>Manure Land Application, Best Management Practices, Plan for Proper Management of Dead Animals, Catastrophic Death Loss Disposal, and Proper Chemical Handling</b>
<b>Appendix 1 Page 15--16</b>	<b>CNMP Plan Data: Animal and Manure Inventory, Commercial Fertilizer Application Plan, &amp; Manure Transfers</b>
<b>Appendix 2 Page 17--18</b>	<b>Emergency Response Plan</b>
<b>Appendix 3 Page 19</b>	<b>Suggested Record Keeping Information</b>

All programs and services of the Natural Resources Conservation Service are provided in a nondiscriminatory manner. The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

## Purpose of the Comprehensive Nutrient Management Plan (CNMP)

The Comprehensive Nutrient Management Plan (CNMP) is a conservation system for your Animal Feeding Operation (AFO). It is designed to address, at a minimum, the soil erosion and water quality concerns on your operation. The CNMP includes the following five (5) components: Manure and Wastewater Handling & Storage, Land Treatment, Nutrient Management, Record Keeping, and Other Utilization of Animal Waste.

**Nutrient Management** is managing the source, rate, form, timing, placement and utilization of manure, other organic by-products, bio-solids, and other nutrients in the soil and residues. The goal is to effectively and efficiently use the nutrient resources to produce food, forage, fiber, and cover while minimizing the transport of nutrients to ground and surface water and environmental degradation.

### Nitrogen and Phosphorus vs. Water Quality

Nitrogen and Phosphorus are two nutrients that have the potential to impair the quality of our groundwater and surface water. Nitrogen out of the root zone may leach to the groundwater or it may enter subsurface drains and be transported to surface water. The EPA Drinking Water Maximum Contaminant Level (MCL) for Nitrate-N is 10 mg/L.

**Phosphorus** may leach or runoff into surface waters. Phosphorus may contribute to excessive algae growth which may cause low oxygen levels in surface water. This in turn may impair aquatic life. This manure and nutrient management plan will help to protect the groundwater and surface water. Applying animal manure to farmland is an appropriate and environmentally sound management practice for livestock and poultry producers. Land applications recycle nutrients from manure to soil for plant growth and add organic matter to improve soil structure, tilth, and water holding capacity. As with other nutrient sources, improper use of manure can result in environmental damage. One of the major concerns associated with manure application is the buildup of phosphorus (P) in soils, and the subsequent impact of P on surface water quality.

### What is the Nature of Manure Phosphorus?

Phosphorus occurs in animal manure in a combination of inorganic and organic forms. In general, 45 to 70 percent of manure P is inorganic. Organic P constitutes the rest of total P. Essentially, all inorganic P is in the orthophosphate form, which is the form taken up by growing plants. Much of the organic P is easily decomposable by soil microorganisms to the inorganic form. Factors such as temperature, soil moisture, and soil pH affect the P mineralization rate. The availability of P from manure ranges from 80 to 100 percent, compared to 100 percent availability in commercial fertilizers. When nutrient application is based on P, 90 percent availability normally is used for application rate calculations. In other words, the total P in manure should provide nearly the same effect as an equal amount of P from commercial fertilizers, as far as crop response is concerned.

### How Much P is Present in Manure?

Nutrients in manure vary greatly from operation to operation, depending on animal species, the size of animals, and the ration fed. Manure P, like other nutrients, is normally not uniform even in the same storage facility, depending on various factors such as the amount of bedding, the amount of moisture entering the system, and how the manure is handled and stored. Therefore, the first step in developing an effective manure application plan is to determine the amount of nutrients in the manure. It is strongly recommended that the nutrient content of manure be determined by laboratory analysis annually or when manure handling procedures change. Broiler litter is relatively high in all three major nutrients, especially phosphorus.

### Why Does Soil P Increase?

In many areas of intensive livestock and poultry production, manure normally is applied at rates designed to meet crop nitrogen (N) requirements. This often results in a buildup of soil test P (STP) above sufficient amounts for optimal crop yields. This is because the amount of P in manure is considerably greater than the amount removed in harvested crops. For example, the N:P ratio of most poultry litter and feedlot manure is close to 1:1, but most crops require an N to P ratio of 8:1. While N gets used, P builds up in the soil. Long-term research, conducted at the OSU Agricultural Experiment Station at Lahoma, documents soil-P depletion and enrichment from 27 years of annual applications of zero to 80 lb/acre fertilizer P for winter wheat production. Change in the soil test P index is well correlated with net P input or removal. About 14 lb P<sub>2</sub>O<sub>5</sub>/acre is required to raise or lower the STP by 1.0 unit for this silt loam soil. The amount of P<sub>2</sub>O<sub>5</sub> needed to change STP may vary with soil texture, pH, and other soil properties. There may also be differences between inorganic P fertilizer and organic P sources, such as animal manure and biosolids. When manure is surface-applied, as in pasture and hayland systems, STP may increase faster than in cropping systems where manure is incorporated, or mixed well, with soil.

**How Does Soil P Affect Water Quality?** Most soils have a large capacity to retain P. Even large additions of P will be mostly retained by soils provided there is adequate contact with the soil. However, increasing the amount of P in soils results in increased levels of P in soil solutions. Generally, this will result in small, but environmentally important, increases in the amount of dissolved P in water that passes over or through soils. Adsorbed and precipitated phosphates are associated more with fine soil particles than with coarse particles. When soil erosion occurs, and soil particles and organic matter are carried to a stream or lake, this sediment-bound P becomes a source of P in water. Excessive levels of P in water often promote eutrophication and cause water quality problems. These problems limit water use for fisheries, recreation, industry, and drinking due to the increased growth of undesirable algae and aquatic weeds, and shortage of oxygen. Lake water P concentrations at around 0.05 ppm are considered critical; at values above this, eutrophication is accelerated.

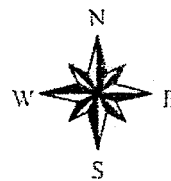


# Mitchell Poultry Farm Waste Application Map



No Waste Application in Hahed Areas

0 1000 2000 3000 Feet

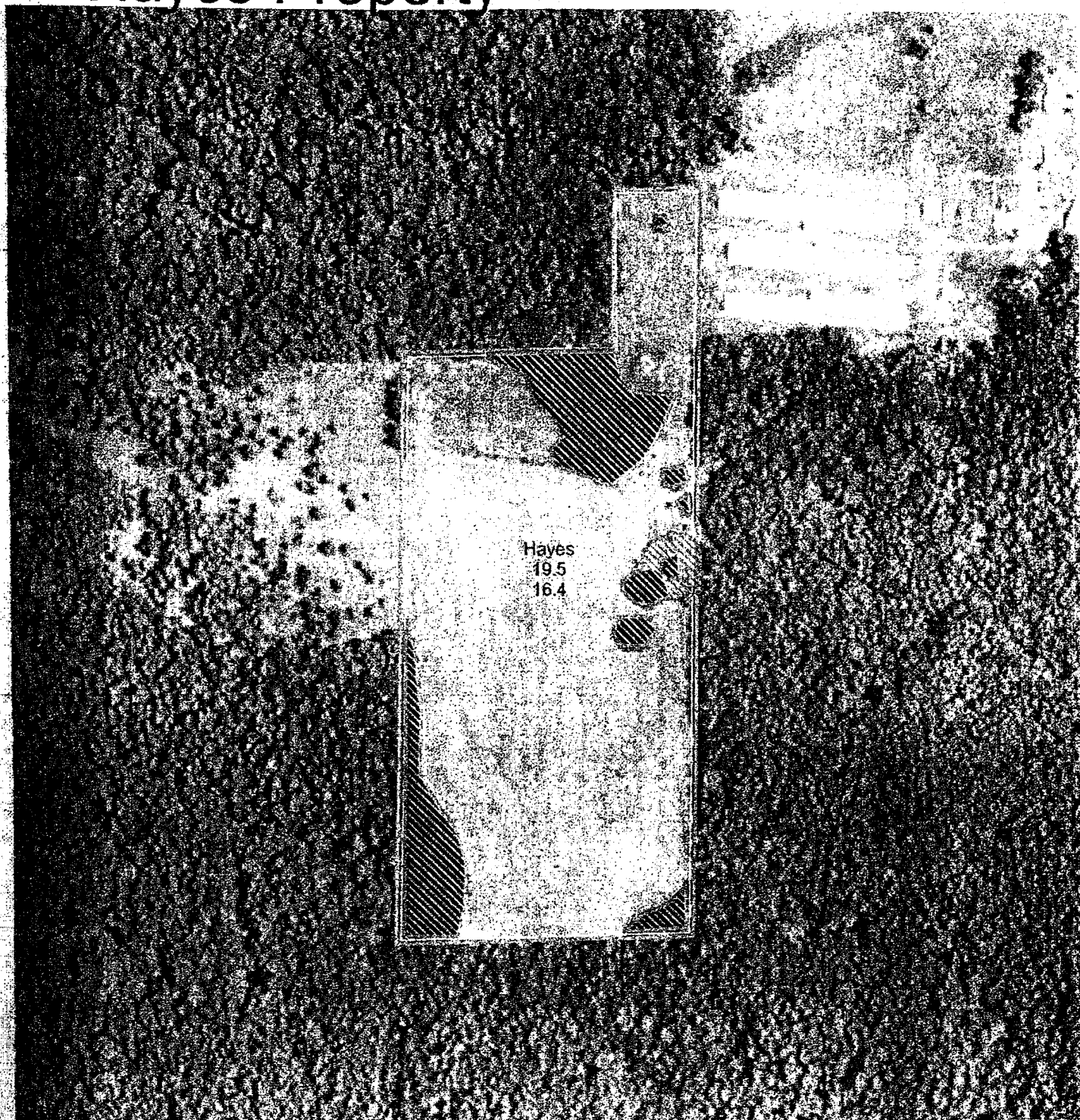


Mitchell Poultry Farm  
230 Acres  
107 Spreadable Acres

(2009 Cargill supp-00196)

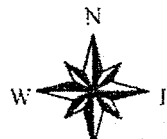


# Mitchell Waste Application Map Hayes Property



No Application in Hashed Areas

0 250 500 750 Feet



Hayes  
19.5 Acres  
16.4 Spreadable Acres  
(2009 Cargill supp-00197)



# Mithcell Poultry Farm, North Farm Waste Application Map



No Waste Application in Hashed Areas

0 500 1000 1500 Feet

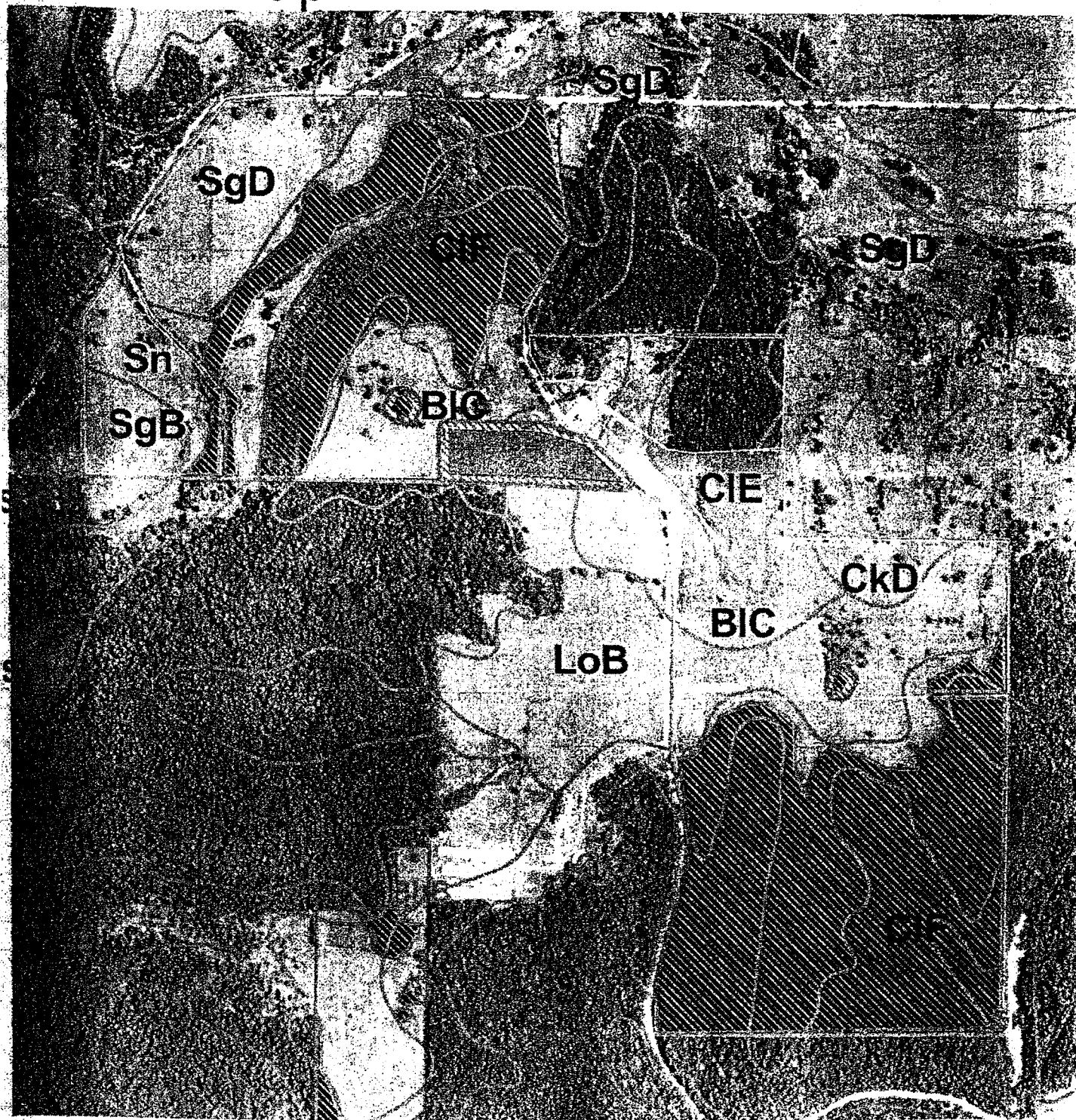


North Farm  
27.3 Acres  
23.1 Spreadable Acres

(2009 Cargill supp-00198)



# Mitchell Poultry Farm Soils Map



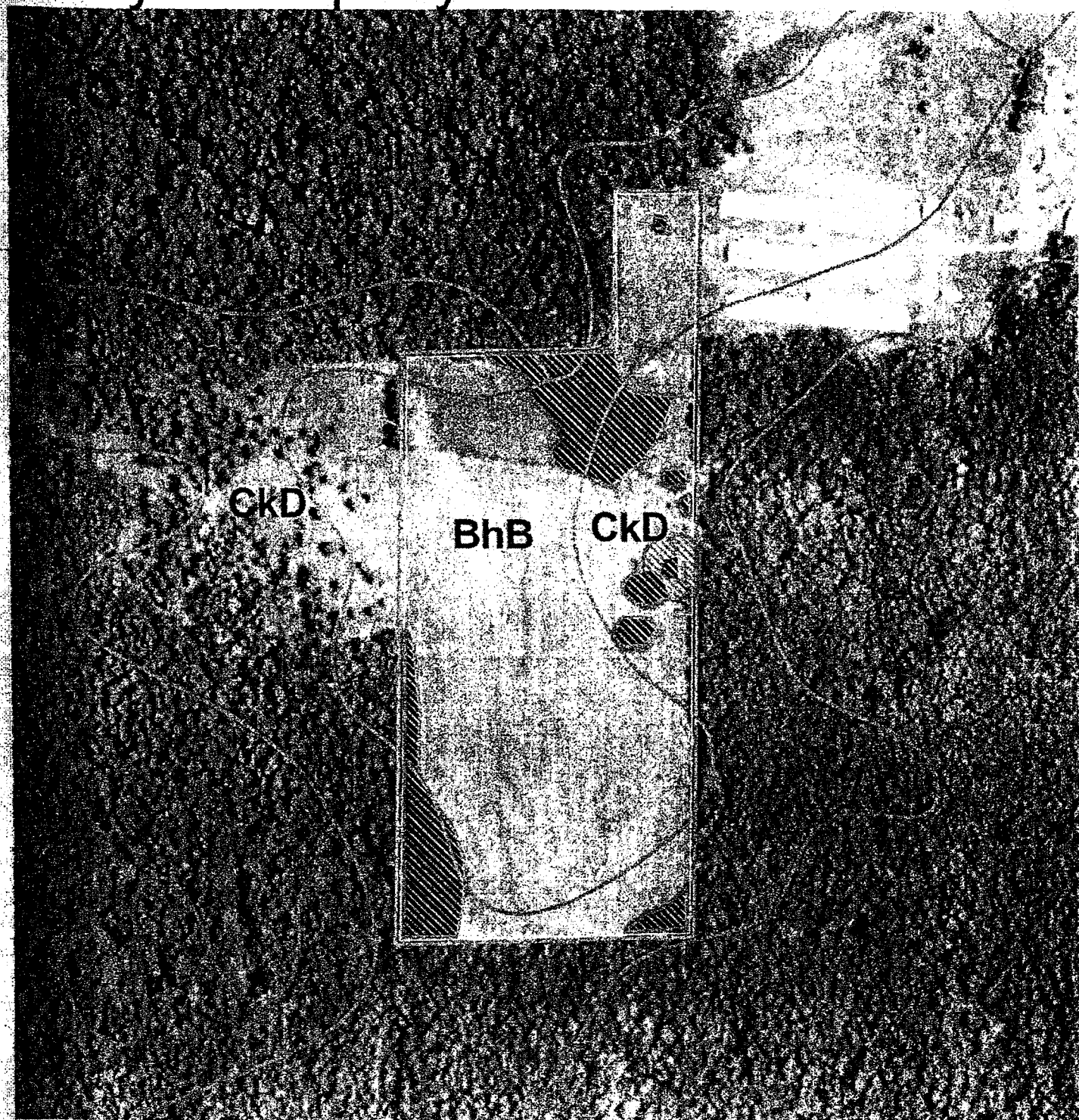
0 1000 2000 3000 Feet



(2009 Cargill supp-00199)



# Mitchell Poultry Farm Soils Map Hayes Property



0 250 500 750 Feet



(2009 Cargill supp-00200)



# Mitchell Poultry Farm, North Field Soils Map



0 500 1000 1500 Feet



(2009 Cargill supp-00201)

## POULTRY COMPREHENSIVE NUTRIENT MANAGEMENT PLAN (CNMP)

Landowner: Jerri Mitchell
 Plan Years: 5

Operation Name: Mitchell Poultry Farm
 ODAFF License Number:

Number of Animals: 10,000
 Type of Animals: Turkey

**Narrative Description of Operation and Conditions:** (Type of Confinement, Management of Operation, Land Application Site Information (on-site, off-site, and number of acres available, crop and/or pasture), Manure and Wastewater Handling and Type of Storage Facilities, Mortality Disposal Facilities, describe landowners concerns and needs with this CNMP, etc.): (Use Text Box Below)

### Description of Operation:

The operation pertains to a Poultry Feeding Operation with the poultry type being broilers; and the number of poultry houses is Four; with a total capacity of 10,000 per flock, cycling five flocks per year. Clean out of litter is planned once a year. A composter is used for handling and disposing of normal mortality. Total litter production is estimated to be 450 tons per year.

### Application Information:

Field 1, consists of 10 acres of grazed bermudagrass pastureland. Approximately 8 acres of this land can accept the "Full Rate" of Phosphorus (200 lbs./Ac of P2O5). The operator can apply 3.3 tons an acre. There is approximately 2 acres that no litter can be applied. Total litter applied on this field will be 26.4 tons.

Field 2 consists of 17 acres of grazed bermudagrass pastureland. Approximately 15 acres of this land can accept the "Full Rate" of Phosphorus (200 lbs./Ac of P2O5). The operator can apply 3.3 tons an acre. There is approximately 2 acres that no litter can be applied. Total litter application on this field will be 50 tons

Field 5, consists of 100 acres of grazed bermudagrass pastureland. Approximately 53 acres of this land can accept the "Full Rate" of Phosphorus (200 lbs./Ac of P2O5). The operator can apply 3.3 tons an acre. There is approximately 47 acres that no litter can be applied. Total litter applied on this field will be 175 tons.

Field 6 consists of 15 acres of grazed bermudagrass pastureland. Approximately 14 acres of this land can accept the "Full Rate" of Phosphorus (200 lbs./Ac of P2O5). The operator can apply 3.3 tons an acre. There is approximately 1 acres that no litter can be applied. Total litter application on this field will be 46.2 tons

Field 10, consists of 24 acres of grazed bermudagrass pastureland. Approximately 22 acres of this land can accept the "Full Rate" of Phosphorus (200 lbs./Ac of P2O5). The operator can apply 1.6 tons an acre. There is approximately 2 acres that no litter can be applied. Total litter applied on this field will be 35 tons.

Field 12 consists of 82.4 acres of grazed bermudagrass pastureland. Approximately 10 acres of this land can accept the "Full Rate" of Phosphorus (200 lbs./Ac of P2O5). The operator can apply 1.6 tons an acre. There is approximately 72.4 acres that no litter can be applied. Total litter application on this field will be 16 tons

Field 13, consists of 8 acres of grazed bermudagrass pastureland. Approximately 8 acres of this land can accept the "Full Rate" of Phosphorus (200 lbs./Ac of P2O5). The operator can apply 1.6 tons an acre. Total litter applied on this field will be 12.8 tons.

Field Hayes consists of 19 acres of grazed bermudagrass pastureland. Approximately 16 acres of this land can accept the "Full Rate" of Phosphorus (200 lbs./Ac of P2O5). The operator can apply 3.3 tons an acre. There is approximately 3 acres that no litter can be applied. Total litter application on this field will be 52.8 tons



11/2005

OKLAHOMA PHOSPHORUS ASSESSMENT WORKSHEET				
Client Name:	Mitchell Poultry Farm		Field(s):	1
Planner:	Eric Daniels		Location:	6/20/2025
Date:	2/21/2007		Crop:	Berm
Nutrient Limited Watershed (yes/no):	Yes		Ctrl + C clears worksheet	
Soil Test P Index Mehlich III (lbs./ac)	34			
Application Method	Surface applied and incorporated within 7 days or injected 2" below the surface	Surface applied or incorporated more than 7 days after application	Surface applied on frozen or snow covered ground	
	X			
Land Slope %	0 - 8 %	8.1 - 15 %	> 15.1 %	
	X			
Erosion Rate Greater Than "T"	No	Yes		
	X			
Flooding Frequency	None	Occasionally	Frequently	
	X			
Distance of Manure Application to Perennial Stream, Pond, Well, or Sinkhole	> 100 ft. or Buffer Strip Established		0 - 100 ft.	
	X			
Distance of Manure Application to Intermittent Stream	> 50 ft. or Buffer Strip Established		0 - 50 ft.	
	X			
Depth of Soil	> 20.1 in.	10.1 - 20 in.	0 - 10 in.	
	X			
Rock Fragments in soil surface 3" to 10" in diameter and exceed 50% by weight or > 10" in diameter and exceed 25% by weight	No		Yes	
	X			
Rocks > 10" in diameter which cover > 3% of the soil surface	No		Yes	
	X			
Nutrient Limited Watershed Watershed Application Rates				
Nutrient Limited Watershed Watershed Application Rates				
Low Rating	Apply at full rate	Apply up to the following rates of P2O5 annually not to exceed the Nitrogen requirement of the crop: Application of up to 200 lbs/ac P2O5 when surface applied. Application of up to 300 lbs/ac P2O5 when applied through sprinkler irrigation and managed to prevent runoff. Application of up to 400 lbs/ac P2O5 when incorporated within 7 days. When a Split Application is designated, no more than 1/2 the allowed rate of P2O5 will be applied per application at least 30 days apart. On occasionally flooded soils, application may be made between June 20 through September 20. Application may also be made between February 1 through April 20 on established cool season grasses with at least 4 inches of height.		

## Exhibit 1

## Nutrient Budget Worksheet

11/2005

Landowner: Mitchell Poultry Farm				Field No.	1	8 Acres	
<b>Purpose (Check all that apply)</b>							
<input checked="" type="checkbox"/> Budget and supply nutrients for plant production				<input checked="" type="checkbox"/> Utilize organic material as nutrient source			
<input checked="" type="checkbox"/> Minimize agricultural nonpoint source pollution				<input checked="" type="checkbox"/> Maintain or improve soil condition			
<b>Crop Sequence/Rotation</b>				<b>Expected Yield</b>			
Bermuda				5 ton			
<b>Nutrient Content of Manure per</b>				<input checked="" type="checkbox"/> Ton	<input type="checkbox"/> lbs./1000 gal.		
N Test	N Remaining	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O				
43	21.5	60	30				
<b>Current Soil Test Levels</b>							
N	P	K	pH	SOM%	EC		
0	34	86	6.1				
<b>Recommended Nutrients to Meet Expected Yield and Grass Establishment (See Tables in 590 Standard)</b>							
N	N for Grass Est.	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	Lime	Other		
250		26	73.4				
<b>Nutrient Sources</b>							
Credits		N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O			
1. Nitrogen credits from previous legume crop							
2. Residual from long-term manure application							
3. Irrigation water							
4. Other (Atmosphere, etc.)		0					
5. Total Credits		0	0	0			
Applied Nutrients		N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O			
		Alt. 1	Alt. 2	Alt. 1	Alt. 2	Alt. 1	Alt. 2
6. Fertilizer	Starter						
	Other	179					
7. Manure or Organic by-products		71		200		99	
8. Total Applied Nutrients		250	0	200	0	99	0
9. Total Nutrients (add lines 5 and 8 plus N from Soil Test)		250	0	200	0	99	0
10. Recommended Nutrients		250	250	26	26	73	73
11. Nutrient Status (subtract line 10 from 9)		0	-250	174	-26	26	-73
If line 11 is a negative number, this is the amount of additional nutrients needed to meet the crop recommendation. If line 11 is a positive number, this is the amount by which the applied nutrients exceed the crop requirements.							
Nutrient Management Decision - Including method, rate, form and timing of application:				Producer Selected Alternative:		1	
3.3 tons poultry litter per acre plus 179 lbs. of actual N per acre to reach 5 ton yield goal.							
Ctrl + d clears worksheet							



11/2005

OKLAHOMA PHOSPHORUS ASSESSMENT WORKSHEET				
Client Name:	Mitchell Poultry Farm		Field(s):	2
Planner:	Eric Daniels		Location:	6/20/2025
Date:	2/21/2007		Crop:	Berm
Nutrient Limited Watershed (yes/no):	Yes		Ctrl + C clears worksheet	
Soil Test P Index Mehlich III (lbs./ac)	98			
Application Method	Surface applied and incorporated within 7 days or injected 2" below the surface	Surface applied or incorporated more than 7 days after application	Surface applied on frozen or snow covered ground	
	X			
Land Slope %	0 - 8 %	8.1 - 15 %	> 15.1 %	
	X			
Erosion Rate Greater Than "I"	No	Yes		
	X			
Flooding Frequency	None	Occasionally	Frequently	
	X			
Distance of Manure Application to Perennial Stream, Pond, Well, or Sinkhole	> 100 ft. or Buffer Strip Established		0 - 100 ft.	
	X			
Distance of Manure Application to Intermittent Stream	> 50 ft. or Buffer Strip Established		0 - 50 ft.	
	X			
Depth of Soil	> 20.1 in.	10.1 - 20 in.	0 - 10 in.	
	X			
Rock Fragments in soil surface 3" to 10" in diameter and exceed 50% by weight or > 10" in diameter and exceed 25% by weight	No		Yes	
	X			
Rocks > 10" in diameter which cover > 3% of the soil surface	No		Yes	
	X			
Nutrient Limited Watershed Watershed Application Rates				
Moderate Rating	Apply at full rate	Apply up to the following rates of P2O5 annually not to exceed the Nitrogen requirement of the crop: Application of up to 200 lbs/ac P2O5 when surface applied. Application of up to 300 lbs/ac P2O5 when applied through sprinkler irrigation and managed to prevent runoff. Application of up to 400 lbs/ac P2O5 when incorporated within 7 days. When a Split Application is designated, no more than 1/2 the allowed rate of P2O5 will be applied per application at least 30 days apart. On occasionally flooded soils, application may be made between February 1 through April 20 on established cool season grasses with at least 4 inches of height.		

## Exhibit 1

## Nutrient Budget Worksheet

11/2005

Landowner: Mitchell Poultry Farm				Field No. 2		15 Acres	
<b>Purpose (Check all that apply)</b>							
<input checked="" type="checkbox"/> Budget and supply nutrients for plant production				<input checked="" type="checkbox"/> Utilize organic material as nutrient source			
<input checked="" type="checkbox"/> Minimize agricultural nonpoint source pollution				<input checked="" type="checkbox"/> Maintain or improve soil condition			
<b>Crop Sequence/Rotation</b>				<b>Expected Yield</b>			
Bermuda				5 ton			
<b>Nutrient Content of Manure per</b>				<input checked="" type="checkbox"/> Ton <input type="checkbox"/> lbs./1000 gal.			
N Test	N Remaining	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O				
43	21.5	60	30				
<b>Current Soil Test Levels</b>							
N	P	K	pH	SOM%	EC		
0	98	110	5.7				
<b>Recommended Nutrients to Meet Expected Yield and Grass Establishment (See Tables in 590 Standard)</b>							
N	N for Grass Est.	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	Lime	Other		
250		0	59				
<b>Nutrient Sources</b>							
Credits		N		P <sub>2</sub> O <sub>5</sub>		K <sub>2</sub> O	
1. Nitrogen credits from previous legume crop							
2. Residual from long-term manure application							
3. Irrigation water							
4. Other (Atmosphere, etc.)		0					
5. Total Credits		0		0		0	
<b>Applied Nutrients</b>		N		P <sub>2</sub> O <sub>5</sub>		K <sub>2</sub> O	
		Alt. 1	Alt. 2	Alt. 1	Alt. 2	Alt. 1	Alt. 2
6. Fertilizer	Starter						
	Other	179					
7. Manure or Organic by-products		71		200		99	
8. Total Applied Nutrients		250	0	200	0	99	0
9. Total Nutrients (add lines 5 and 8 plus N from Soil Test)		250	0	200	0	99	0
10. Recommended Nutrients		250	250	0	0	59	59
11. Nutrient Status (subtract line 10 from 9)		0	-250	200	0	40	-59
If line 11 is a negative number, this is the amount of additional nutrients needed to meet the crop recommendation. If line 11 is a positive number, this is the amount by which the applied nutrients exceed the crop requirements.							
Nutrient Management Decision - Including method, rate, form and timing of application.				Producer Selected Alternative:		1	
3.3 tons poultry litter per acre plus 179 lbs. of actual N per acre to reach 5 ton yield goal.							
Ctrl + d clears worksheet							



11/2005

OKLAHOMA PHOSPHORUS ASSESSMENT WORKSHEET				
Client Name:	Mitchell Poultry Farm		Field(s):	5
Planner:	Eric Daniels		Location:	7/20/2025
Nutrient Limited Watershed (yes/no):			Yes	Date: 2/21/2007
				Crop: Berm
Nutrient Limited Watershed (yes/no):			Yes	Ctrl + C clears worksheet
Soil Test P Index Mehlich III (lbs./ac)	54			
Application Method	Surface applied and incorporated within 7 days or injected 2" below the surface		Surface applied or incorporated more than 7 days after application	Surface applied on frozen or snow covered ground
	X			
Land Slope %	0 - 8 %		8.1 - 15 %	> 15.1 %
	X			
Erosion Rate Greater Than "T"	No		Yes	
	X			
Flooding Frequency	None		Occasionally	Frequently
	X			
Distance of Manure Application to Perennial Stream, Pond, Well, or Sinkhole	> 100 ft. or Buffer Strip Established		0 - 100 ft.	
	X			
Distance of Manure Application to Intermittent Stream	> 50 ft. or Buffer Strip Established		0 - 50 ft.	
	X			
Depth of Soil	> 20.1 in.		10.1 - 20 in.	0 - 10 in.
	X			
Rock Fragments in soil surface 3" to 10" in diameter and exceed 50% by weight or > 10" in diameter and exceed 25% by weight	No		Yes	
	X			
Rocks > 10" in diameter which cover > 3% of the soil surface	No		Yes	
	X			
No Nutrient Limited Watershed Water Application Rates				
No Nutrient Limited Watershed Water Application Rates				
Low Rating	Apply at full rate	Apply up to the following rates of P2O5 annually not to exceed the Nitrogen requirement of the crop: Application of up to 200 lbs/ac P2O5 when surface applied. Application of up to 300 lbs/ac P2O5 when applied through sprinkler irrigation and managed to prevent runoff. Application of up to 400 lbs/ac P2O5 when incorporated within 7 days. When a Split Application is designated, no more than 1/2 the allowed rate of P2O5 will be applied per application at least 30 days apart. On occasionally flooded soils, application may be made between June 20 through September 20. Application may also be made between February 1 through April 20 on established cool season grasses with at least 4 inches of height.		